

June 19, 2012

Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: *Ex Parte Presentation*, ET Docket No. 08-59
Amendment of the Commission's Rules to Provide Spectrum
for the Operation of Medical Body Area Networks

Dear Ms. Dortch,

On June 8, 2012, the following representatives met by teleconference with Geraldine Matise, Bruce Romano, Mark Settle, Jamison Prime, Brian Butler, and Shane Huang, all of the Office of Engineering and Technology, to discuss the rules adopted in the First Report and Order in above-referenced proceeding: Philips Healthcare: Delroy Smith, Dong Wang, & David Siddall; GE Healthcare: Neal Siedl & Ari Fitzgerald; Aerospace & Flight Test Radio Coordinating Council (AFTRCC): Dan Hankins, Chip Yorkgitis, & Ken Keane.

The parties set forth concerns and questions related to the details of the First Report and Order, the rules adopted therein, and application of certain MedRadio Rules that will govern Medical Body Area Networks (MBANs). While appreciation for an excellent Report and Order was sincerely expressed by all, concerns, clarifications, and questions all were discussed with the goal that everyone understand the new rules. The parties expressed the belief that the issues they raised were appropriate for the issuance of errata. The issues discussed are set forth immediately below.

1. In new Section 95.628(f)(2), reference to “(f)” should be “(d)”.
2. Consultation with AFTRCC as primary spectrum coordinator is required when changes are made in MBAN location or operation, and therefore should be included in para. 63 to prevent any confusion. Suggested change would read: “Because changes in MBAN location or operation could place that MBAN within line-of-sight of an AMT receive site, we will prohibit the MBAN from operating under the changed parameters until the MBAN coordinator **has consulted with the AMT coordinator and** determined if a new or revised coordination agreement with the AMT coordinator is required, and if so, coordination with the AMT coordinator is completed.” This then would track Section 95.1223(c), and so conform the text to the Rule.

3. By operation of the MedRadio rules, the definition of health care facility in Section 95.1203 extends permissible MBAN locations beyond hospitals to “institutions and organizations regularly engaged in providing medical services through clinics, public health facilities, and similar establishments, including government entities and agencies” “Clinics” are not “hospitals,” number in the thousands, and cannot be accommodated for MBANS in 2360-2390 MHz. The uncoordinated 2390-2400 MHz band provides spectrum for these facilities.
4. The Regulatory Flexibility Analysis (RFA) at p.60, para. 15, should be revised to track Section 95.1203, *i.e.*,: “An MBAN may be operated anywhere that CB station operation is authorized under § 95.405, except in the 2360-2390 MHz band MBAN use is restricted to indoor operation within a health care facility registered with the MBAN coordinator.”
5. Section 95.1223: Health care facilities should be required to register the number and type (i.e. by FCC ID) of programmer/control transmitters (“P/Cs”), but not “all MBAN devices” or each individual (*e.g.* unique serial numbers) P/C.¹ Medical body-worn devices (“sensors”) will be disposable and only operate in the 2360-2390 MHz band under the control of a P/C. All sensors for a given P/C will operate in a coordinated fashion (*e.g.* using TDMA), so a count of P/Cs will provide a basis for accurate coordination calculations. We suggest that Section 95.1223(a) be amended to read “Prior to operating MBAN devices in the 2360-2390 MHz band, a health care facility must register with a frequency coordinator designated under § 95.1225. Operation of MBAN devices in the 2360-2390 MHz band is prohibited prior to the MBAN coordinator notifying the health care facility that registration and coordination (to the extent coordination is required under paragraph (c)) is complete.”
6. Section 95.628(c) requires only the P/C to cease operating in 2360-2390 MHz if it does not receive the control message. The rule is intended to require both the P/C and all of its associated sensor devices to cease operating in this situation. The rule also is intended to require sensors to cease operating in 2360-2390 MHz if they lose communication with their P/C. Accordingly, we suggest that the rule be revised to read as follows: “A MedRadio programmer/control transmitter, **and its associated medical body-worn transmitters**, shall not commence operating in, and shall automatically cease operating

¹ Because hospitals may have hundreds of P/Cs, replacement of PCs (*e.g.*, of an inoperable unit) with another unit of the same type will be a common occurrence that should not require new registration. Section 95.1223(b) reads appropriately in this respect, however the beginning of Section 95.1223(a) may be interpreted as requiring a separate registration for each individual unit.

in the 2360-2390 MHz band if the programmer/control transmitter does not receive, in accordance with the protocols specified by the manufacturer, a control message permitting such operation. **Medical body-worn transmitters shall cease operating in 2360-2390 MHz if they lose communication from their associated programmer/control transmitter.** Additionally, a MedRadio programmer/control transmitter **and its associated medical body area transmitters** operating in the 2360-2390 MHz band shall comply with a control message that notifies the devices to limit transmissions to segments of the 2360-2390 MHz band or to cease operation in the band.”

7. Existing MedRadio Section 95.1209 appears to permit only a polled media access control (MAC) protocol where each sensor transmission requires a one-to-one poll from the P/C. There is no justification for limiting MBAN devices in this fashion and there is no indication in the accompanying First Report and Order that this limitation was intended. Expected MBAN protocols (*e.g.* IEEE 802.15.6) are likely to use more efficient MAC techniques such as TDMA. Moreover, for MBANs operating only in the 2390-2400 MHz band, there is no reason to require a P/C device or any specific network topology (see no. 11, below).
8. Section 95.1213 limits outside antenna to 9.8 feet *off ground*. This language is inherited from MedRadio rules and for MBAN is applicable only to 2390-2400 MHz since operation in 2360-2390 MHz is strictly limited to indoors only. This height irrationally appears to exclude second and all higher floors in buildings, such as on balconies. While the original purpose of the restriction is unclear, five feet above the building roof would be more sensible for MBAN if a height restriction is even needed.
9. Section 95.1213 also should be revised in its applicability to MBAN to clarify that an antenna must be affixed to its MBAN transmitter for devices that operate in 2360-2390 MHz, as proposed by the parties in their Joint Proposal. This is necessary to prevent different antennas being used that could increase radiated power in ways that could undermine the technical validity of the coordination. *See Joint Parties Ex Parte* of January 27, 2012, proposed revision to rule 95.639: “The antenna associated with any MBANS transmitter must be supplied with the transmitter and affixed directly to the transmitter without use of any connecting device....”
10. The definition of MBAN is “a [single] programmer/control transmitter and *multiple*” sensors. This would seem to preclude single-sensor MBANs, which is an anticipated common medical use case. There is no rationale expressed in the First Report and Order for this limitation. Also, for operations in the 2390-2400 MHz band, network topologies are envisioned that would include multiple or zero P/C devices. (See no. 11 below.)

11. Section 95.1209(g) and the definition of MBAN in Appendix 1 to Subpart E appear to substantially constrain MBAN topology² although the only filings on the topic in the proceeding³ specifically cautioned against doing so. The only stated rationale for this decision is to provide more certainty that each programmer/control transmitter will receive the control message over the facility's LAN⁴. Furthermore, the language proposed for Section 95.628(c) provides more certainty. However, since the only purpose of the control message is to facilitate compliant indoor 2360-2390 MHz operation and the final rules in fact permit simple MBANs without support for control message / LAN connectivity to operate autonomously in the 2390-2400 MHz band⁵, there is no apparent rationale for imposing topology constraints on MBANs operating exclusively in the 2390-2400 MHz band. Multiple and zero P/Cs should be allowed for MBAN operations in the 2390-2400 MHz band.
12. Without modification of the definitions or clarification in the First Report and Order text, the existing rules could be interpreted to require that all MBAN devices – except for the *single* programmer/control transmitter in each MBAN – be “placed on or in close proximity to the human body (e.g. within a few centimeters)”⁶. This potentially could be construed to preclude devices typically located a few *meters* from the human body (e.g. infusion pumps, bedside monitors, anesthesia machines, etc.) from participating in the MBAN unless they are the single P/C transmitter allowed per MBAN.
13. We understand that the staff interprets US footnote 101 to permit intra-aircraft communication in 2390-2400 MHz. (Such communication would not be within a hospital, and therefore is prohibited in 2360-2390 MHz.)
14. We request that the labeling requirement be strengthened as proposed in our Joint Proposal, proposed Rule 95.1619: “The statement may be placed in the instruction manual for the transmitter on the first page in all caps where it is not feasible to place the statement on the device.”
15. We request that the MBAN coordinator duties as set out in Section 95.1225 be revised to make those duties clearer and more explicit as set forth in the First Report and Order. We suggest that Section 95.1225 (b)(2) read as follows.
“(b) The frequency coordinator shall perform the following functions: . . . (2) Make an initial determination whether an MBAN is within line of sight of an AMT receive facility

² See 47 C.F.R. § 95.1209(g) and Appendix 1 to Subpart E of Part 95 (defining MBAN as “a low power network consisting of a [*single*] MedRadio programmer/control transmitter and multiple body-worn devices.”).

³ Joint Parties’ Nov 21, 2011 *ex parte* at p.5; Advamed Oct 5, 2009 comments at p.7.

⁴ See MBAN Order ¶ 37.

⁵ See *id.* ¶¶ 49, 65 and 47 C.F.R. § 95.628(c).

⁶ See definition of “medical body-worn devices” contained in Appendix 1 to Subpart E of Part 95.

in the 2360-2390 MHz band and coordinate MBAN operations within line-of-sight of an AMT receive facility with the designated AMT coordinator as specified in § 87.305”

16. The R&O discussed but did not adopt a requirement for immediate shut-down in the event of interference. In the First Report and Order at para. 71 the Commission states: “Under the procedures suggested by the Joint Parties, if a health care facility is notified of MBAN interference to an AMT receive antenna, the MBAN system should be required to immediately cease transmission. We note that the Joint Parties’ proposal does not clearly specify who is responsible for notifying the health care facility of interference and incorporates use of the transition plan concept, which we are not adopting.” This appears to be based on a mistake of fact. The Joint Proposal contemplated that “the MBAN coordinator *would be the single point of communication* between the AMT parties to the hospitals and vendors” *ex parte* dated January 27, 2012, at p. 2 (emphasis added). We urge that Section 95.1223(a) be revised to add at the end: “In the event a healthcare facility or the MBANS coordinator is notified of MBANS interference to an AMT receive antenna, the healthcare facility shall ensure that the interfering MBANS network or networks immediately cease transmissions on the frequencies causing interference.” This addition would provide important guidance to all concerned as to the serious obligations attendant to secondary obligations in the band.

Respectfully Submitted,

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